Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHIH-YUAN LU and HORNG-HUEI TSENG

Appeal No. 1998-2956
Application No. 08/709,964

ON BRIEF

Before KRASS, JERRY SMITH, and DIXON, **Administrative Patent Judges**.

DIXON, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 20-23, which are all of the claims pending in this application.

We REVERSE.

BACKGROUND

The appellants' invention relates to a high density dynamic random access memory cell structure having a polysilicon pillar capacitor. An understanding of the invention can be derived from a reading of exemplary claim 20, which is reproduced below.

20. An array of pillar-shaped stacked storage capacitors on a semiconductor substrate, comprising of:

a semiconductor substrate having field oxide areas surrounded and electrically isolated device areas, said device areas having semiconductor devices formed, in part, from a patterned first polysilicon layer, and said devices areas also having device contact areas;

a first insulating layer on said substrate and over said patterned first polysilicon layer,

pillar-shaped capacitor bottom electrodes aligned within and electrically contacting said device contact areas, and further having vertical sidewalls and extending upward over said device contact areas, said pillar-shaped bottom electrodes formed by filling with a second polysilicon layer node contact openings formed in a second insulating layer deposited over said first insulating layer, and then oxidizing and removing said oxidized portion of said second polysilicon layer and said second insulating layer, thereby providing free standing pillar-shaped bottom electrodes;

a capacitor interelectrode dielectric layer on said bottom electrodes;

a patterned third polysilicon layer on said capacitor interelectrode dielectric layer forming top capacitor electrodes, and thereby providing said pillar-shaped stacked storage capacitors.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Inoue et al. (Inoue)	5,541,454	Jul. 30, 1996

Claims 20-23 stand rejected under 35 U.S.C. § 103 as being unpatentable over Inoue.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 13, mailed May 13, 1998) for the examiner's complete reasoning in support of the rejections, and to the appellants' brief (Paper No. 12, filed Apr. 15, 1998) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. Upon evaluation of all the evidence before us, it is our conclusion that the evidence adduced by the examiner is sufficient to establish a **prima facie** case of obviousness with respect to claim 20. Our reasoning for this determination follows.

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a **prima facie** case of obviousness. **See In re Rijckaert**, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). A **prima facie** case of obviousness is established by presenting evidence that the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the references before him to make the proposed combination or other modification. **See In re Lintner**, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972). Furthermore, the conclusion that the claimed subject matter is **prima facie** obvious must be supported by evidence, as shown by some objective teaching in the prior art or by knowledge generally available to one of ordinary skill in the art that would have led that individual to combine the relevant teachings of the references to arrive at the claimed invention. **See In re Fine**, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Rejections based on
§ 103 must rest on a factual basis with these facts being interpreted without hindsight reconstruction of the invention from the prior art. The examiner may not, because of doubt that the invention is patentable, resort to speculation, unfounded assumption or hindsight reconstruction to supply deficiencies in the factual basis for the rejection. **See In re Warner**, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), **cert. denied**, 389 U.S. 1057 (1968). Our reviewing court has repeatedly cautioned against employing hindsight by using the appellants' disclosure as a blueprint to reconstruct the claimed

invention from the isolated teachings of the prior art. **See, e.g., Grain Processing Corp. v. American Maize-Products Co.**, 840 F.2d 902, 907, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988).

Further, as pointed out by our reviewing court, we must first determine the scope of the claim. "[T]he name of the game is the claim." **In re Hiniker Co.**, 150 F.3d 1362,1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998). Therefore, we look to the limitations set forth in claim 20. Here appellants argue that the pillar capacitors of Inoue are expressly aluminum based. (See brief at pages 4-6.) We agree with appellants. The examiner relies upon prior art Figure 9 of Inoue with respect to fin-shaped capacitors and the use of polysilicon for the electrodes. (See answer at page 3.) The examiner also relies upon the pillar capacitors of Inoue as shown in Figures 20A-20H. The examiner stated that the rationale for the combination was increased durability, small size with large capacity. (See answer at page 4.) We disagree with the examiner. These benefits are disclosed in column 4 as the result of the aluminum base pillar shown in Figures 20A-20H.

Appellants argue that Inoue teaches a structure substantially different from appellants' invention which contains a polysilicon pillar and a different interelectrode dielectric. (See brief at page 5.) While the specific details of the dielectric are not recited in the claims, we agree with appellants that there would be more than a mere substitution of polysilicon for the aluminum as the examiner maintains. We find this especially the case

in the disclosure of Inoue since Inoue discloses that the aluminum pillar has the disclosed benefits which have not been disclosed with respect to the use of polysilicon.

In our view, the examiner has found the component parts of the pillar capacitor using different materials, but we find that the examiner has not provided a teaching of pillars formed of polysilicone or a line of reasoning to use polysilicon in place of the disclosed aluminum in Inoue. Therefore, we cannot sustain the rejection of claim 20 and its dependent claims 21-23.

CONCLUSION

To summarize, the decision of the examiner to reject claims 20-23 under 35 U.S.C. § 103 is reversed.

REVERSED

ERROL A. KRASS Administrative Patent Judge	))
JERRY SMITH Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
JOSEPH L. DIXON Administrative Patent Judge	)

JD/RWK

GEORGE O. SAILE
20 MCINTOSH DRIVE
POUGHKEEPSIE, NY 12603